Monitoring Study Group Meeting Minutes

February 19, 2002
Howard Forest

The following people attended the MSG meeting: Tharon O'Dell (BOF-chair), Joe Croteau (DFG), Patrick Vaughan (CDPR), Syd Brown (CDPR), Robert Darby (PALCO), Roger Poff (R. J. Poff and Associates), Rob DiPerna (EPIC), Peter Ribar (Campbell Timberland Management/Hawthorne), Mark Rentz (CFA), Clay Brandow (CDF), Dean Lucke (CDF), Tom Spittler (CGS), Dr. Rich Walker (CDF), Richard Gienger (HWC/SSRC), JB (NMFS), Mike Anderson (Anderson Logging Co.), Susie Kocher (UCCE), Stephen Levesque (Campbell Timberland Management/Hawthorne), Julie Bawcom (CGS), Holly Lundborg (NCRWQCB), Dr. Marty Berbach (DFG), and Pete Cafferata (CDF). **[Note: Action items are bolded]**.

We began the meeting with general monitoring related announcements:

- Tom Spittler stated that the San Francisco Section of the Association of Engineering Geologists (AEG) is sponsoring a workshop titled "Engineering Geology for Timber Harvesting, Wildland Management, and Watershed Restoration." Three sessions of the workshop are being presented by the California Geological Survey (CGS): Santa Rosa—April 12/13; Eureka—April 26/27), and Sacramento—May 17/18). The workshop is primarily intended for geologists but open to the public and each session is limited to 50 participants; Tom urged interested people to register as soon as possible.
- Rich Walker announced that the North Coast Watershed Assessment Program (NCWAP) draft watershed synthesis reports for the Redwood Creek, Mattole River, and Gualala River watersheds are available for public review. All three draft documents can be found online at www.ncwatershed.ca.gov). A public workshop will be held for each of the three watersheds (Feb 23rd for Mattole; Feb 23rd for Redwood Creek; March 9th for Gualala). Written or email comments will be accepted through March 11, 2002 (Gualala comments should be sent to Robert Klamt, Mattole comments to Scott Downie, and Redwood Creek comments to Steve Cannata).
- Holly Lundborg announced that the NCRWQCB staff is presenting a fine sediment monitoring workshop for the NCRWQCB on February 27, 2002 in Eureka, beginning at 1:00 p.m. The primary objective is to familiarize Board members and the public with fine sediment monitoring and how it can be used by the Regional Board in a variety of programs. Topics include: effects of fine sediment on beneficial uses, applicable water quality objectives for fine sediment, fine sediment monitoring techniques, and potential venues for fine sediment monitoring within the Board's jurisdiction.
- Richard Gienger announced that the Salmon Restoration Federation's 20th annual conference will be held in Ukiah from February 28 through March 3, 2002. Complete conference information is available at www.northcoastweb.com/srf. Richard also announced that on March 4, 2002 the Board of Forestry and Fire Protection will have a one day workshop in Sacramento on the THP review process. The goal of the workshop is to provide the BOF with information that may improve the efficacy of the THP submission and review process and potentially reduce THP processing time (a full agenda is available online at www.fire.ca.gov; select BOF).

Pete Cafferata provided the group with a progress report on the Reference Watershed Catalog project. He handed out: 1) an updated Excel spreadsheet with the catalog, 2) a one paragraph description of the project, 3) a summary of information provided from contacting approximately 75 resource professionals throughout California, and 4) a Eureka Times-Standard article on Mill Creek, one of the new inclusions in the catalog. To date, about 20 percent of the people contacted for assistance with the project have responded. Newly added watersheds based on information provided by these people include: Allen Creek, tributary of Yager Creek; French Creek, tributary of the Scott River; Lower South Fork Little River near Trinidad; Mill Creek, tributary of the Smith River; Sprowl Creek, tributary of the Eel, Dinkey Creek, tributary of the Kings River, and Little Kern River, tributary of the Kings River. Additionally, a considerable amount of new information has been provided for watersheds previously entered in the catalog. Pete added that many of the respondents stated that they are having a difficult time understanding what is actually meant by "suitable habitat", since we have not clearly defined this term. It is apparent that it will be a very difficult call to know when a managed watershed qualifies as a reference watershed with managed conditions. Clay Brandow and Marty Berbach offered that suitable habitat for one species does not always equate to that for all species. Richard Gienger added that various watershed size/scale issues further complicate the problem.

There was a considerable amount of discussion on how to proceed on the project. **Tharon O'Dell stated that we need a better return from the individuals selected to help provide additional information—at least a 40-50% response is desired. Tharon agreed with Pete that it would be beneficial to call the people, and when sufficient new information is obtained, schedule another MSG Workgroup meeting in mid to late March to proceed with the project.** JB stated that NMFS believes that we need a better definition of reference watershed, and that their past input has not been incorporated to date. Mark Rentz expressed concern over conclusions generated by the draft NCWAP EMDS flowcharts, and stated that it was his desire that a process be developed to test various theories about what constitutes suitable habitat. Pete explained that Chris Keithley of NCWAP has already used the reference watershed catalog for locating reference conditions for the three watersheds with draft synthesis reports. **JB suggested that it may be appropriate to add heavily disturbed watersheds with adequate fish and habitat data to the catalog, thereby providing a full range of conditions for defining just what is suitable or fully functioning habitat for fish. Holly Lundborg added that if this was attempted, the project could be called the Watershed Reference Catalog, and less time could be spend debating what constitutes reference conditions. Even though it greatly broadens the potential size of the project, there was general agreement that these were valuable suggestions that should be incorporated in future revisions.** Possibly this expanded version of the catalog could help to test/verify the EMDS model and conclusions. **Susie Kocher suggested that data accessibility was a critical element, and that a column in the spreadsheet should be added to denote whether raw data could be obtained. The group agreed that this was a valuable suggestion and should be incorporated in future drafts**. Further discussions on these changes will take place at the next workgroup meeting.

Susie Kocher gave a presentation on monitoring fish habitat restoration projects. UCCE is the lead contractor for this cooperative project to develop a monitoring approach and protocols for DFG. Principle investigator is Dr. Richard Harris, along with Barry Collins, Donna Lindquist, Maggi Kelly, Faith Kearns and Susie Kocher. DFG has funded hundreds of projects since 1981,

but very few have been scientifically monitored to determine if they were properly implemented and effective. The main goal of this project is to create sampling strategies and field methods that can be used to monitor restoration projects. Dr. Walt Duffy of HSU will provide the validation monitoring component using both fish and macroinvertebrate data. The project started in July 2001 and is to be completed by April 2003. The basic approach is to: 1) classify restoration projects by habitat improvement goal; 2) develop conceptual models based on desired outcomes; and 3) select parameters and alternative methods for monitoring physical habitat attributes. Pilot field studies are scheduled to begin in April of 2002. The draft and final reports will be reviewed by a Scientific Review Panel. Additionally, a data management system is being developed for receiving, storing, and delivering restoration monitoring data.

A 50 page draft report describing options and recommendations has been written and sent to DFG for internal review. This document also includes a comprehensive review of existing monitoring programs in the PNW. Relatively little monitoring is currently being done for restoration projects, with the exception of the work being done by ODFW, which is monitoring 75 projects per year (see their report at www.oregon-plan.org/monitoring). The draft progress report will be released to the public at the Salmon Restoration Federation meeting at the end of February. For implementation monitoring, preliminary recommendations include: 1) require mandatory pre-proposal consultation with DFG, 2) improve documentation of project implementation, and 3) collect baseline data before and immediately after project completion for some projects. For effectiveness monitoring, the preliminary recommendations include: 1) conduct effectiveness monitoring for individual projects, categories of projects, and at the small watershed scale, and 2) use a pilot program to determine the most cost-effective and efficient monitoring procedures. Decisions are needed from DFG on the quality of data required, the funding level to be allocated for monitoring, who will complete the monitoring, and what analysis levels will be used (quantitative or qualitative). These decisions will determine the level and scope of monitoring (intensity, number of sites, etc.). The next steps include a review of the draft report by DFG, along with input from the Scientific Review Panel. Decisions will be made about program strategies and field testing for the pilot work will take place from April through fall 2002. The final report is to be prepared by early 2003. **If MSG participants can provide Susie with additional information on existing monitoring data related to restoration projects, please email it to her at sdkocher@ucdavis.edu.**

Following lunch, Pete Cafferata provided a Power Point presentation summarizing the Interagency Water Quality Monitoring Workshop that was held in Santa Rosa on January 15, 2002. The workshop was held due to agency disagreement over how to implement project specific water quality monitoring related to THPs. Participating agencies included DFG, CDF, CGS, CDPR, NCRWQCB, and other Regional WQCBs. There were four invited speakers: Dr. Robert Beschta (OSU), Jack Lewis (USFS-PSW), Randy Klein (RNP), and Graham Matthews (Graham Matthews and Associates). Bob Beschta provided an overview of principles and processes related to turbidity and suspended sediment monitoring. He provided basic information on suspended sediment concentrations (SSCs), sediment transport and sediment rating curves. He presented data from two watersheds he studied for many years in Oregon: Oak Creek near Corvallis, located on MacDonald Dunn Forest, and Flynn Creek, the control watershed for the Alsea Watershed Study located near Newport. He showed suspended sediment rating curves that had high variability within storms, high variability between storms, and high

variability from year to year. These differences are largely due to the supply of sediment available (i.e., more sediment is available on the rising limb of the hydrograph and during early winter storms). Bob concluded that it is very difficult to determine background SSCs, even with good streamflow data. He also discussed turbidity measurement, and some advantages and disadvantages of turbidity monitoring. Finally, he spoke about patterns of sediment transport and possible monitoring approaches—including comparison against a water quality standard, before and after treatment, above and below, and untreated control/treated watershed. Pre-treatment data is needed for the second, third and fourth opinions.

Jack Lewis' topic was sample design for water quality monitoring projects. He stated that the types of designs include controlled experiments, uncontrolled experiments, and before-after control-impact (BACI) studies. Controlled experiments usually cannot be applied in forestry situations, and uncontrolled experiments without pretreatment data cannot provide statistically valid conclusions. BACI studies, in contrast, can be analyzed statistically. Jack illustrated how a BACI design works with data from two tributaries in the Caspar Creek watershed study. Using this data, a statistical power analysis was completed to determine the sample size needed both before and after treatment to detect a true difference of x percent in SSC. He showed that the required sample size drops very rapidly as the true difference in SSC becomes large (e.g., 158 samples pre and post treatment for 20% difference in SSC vs. 11 samples for 150% difference). He next considered upstream/downstream pairings. Again using Caspar Creek data, Jack showed that the upstream station was not an ideal control for the downstream station due to historical logging impacts and channel gradient differences (i.e., 43% difference in SSC). The conclusion was that pre-treatment data is needed even for upstream/downstream pairings. Jack also spoke about continuous automated turbidity measurement. He listed advantages and disadvantages for both manual sediment data collection and automated sediment data collection. He closed with a list of important features of an ideal monitoring design.

Randy Klein discussed physiological impacts of sediment discharge on anadromous fish species. He stated that chronic erosion processes are important because they create chronic turbidity—which in turn has biological implications. He further stated that sediment budget work completed with air photos does not relate well to true biological impacts to fish. He illustrated how various levels and durations of SSC correlate to impacts on fish health with data from Newcombe and Jensen (1996). Randy presented SSC data he has collected for several Redwood Creek tributaries, plus data from Elder Creek in Mendocino County. He identified a SSC threshold of 27 mg/l, which reduces a fish's ability to feed by 50%, and displayed the number of days undisturbed basins had for this parameter vs. the number of days for heavily disturbed watersheds (e.g., 25 days for Prairie and Little Lost Man vs. 101 and 140 for Pather and Lacks, respectively—WY 1999 data). He also illustrated how suspended sediment yield between watersheds can change due to one large landslide, and how this can complicate data collection with a monitoring program.

Graham Matthews provided case studies in field applications of turbidity and suspended sediment monitoring. For the Trinity River basin, he showed how sediment samples taken at 75 sites throughout the watershed for a few storms can provide relative sediment loading information by subbasin. This in turn shows where to focus restoration funds and highlights where land use practices may need to be altered. Another case study discussed was the South

Fork Noyo River watershed in western Mendocino County. A very limited amount of sediment sampling in 2001 at nine sampling stations revealed that sediment yield increased dramatically in the lower reach due to remobilization of stored sediment by moderately sized storms. Graham provided ballpark cost estimates for various types of sediment monitoring programs.

All four speakers addressed the hypothetical THP provided to focus discussion at the workshop. There was general agreement among the speakers that: 1) pre-project data is necessary, 2) the project setting was not ideal for project level monitoring, and 3) it was difficult to identify treatment and control watersheds with similar attributes. Several different possible scenarios were suggested by the speakers, including before and after, above and below, treatment and control, BACI design, basin level stations, and relative sediment loading from tributaries.

A two hour question and answer session followed the formal presentations. The workshop summary handed out provided a summary of the most important questions and answers. General conclusions from this session included: 1) adequate pre-treatment data collection is critical and expected to take at least 1-2 years, 2) intensive water quality monitoring of all THPs is not necessary—it is better to pick a few selected THPs that have an obvious treatment/control pair that can supply unambiguous data, 3) in almost all cases, CDF does not have the authority to require collection of pre-treatment data—since no project has been submitted for review, 4) the best avenue to obtain pre-treatment data is to work cooperatively with timber companies, and 5) hillslope monitoring during and immediately after strong stressing storms can address correcting sediment source areas, but cannot determine if Basin Plan standards are being met. The various resource agencies will meet for further discussions in the near future to refine these concepts and apply what was learned at this workshop.

There was a considerable amount of interest and discussion throughout the Power Point presentation. **It was suggested by Tom Spittler that it would be an excellent opportunity for the MSG to help coordinate and fund THP level water quality monitoring projects, working cooperatively with the industry. The group was in agreement and Stephen Levesque added that Campbell/Hawthorne would likely be willing to cooperate in this type of project. It was also suggested that this type of monitoring could be undertaken on State Forests. It was agreed that this would be a logical next step resulting from dialogue that took place at the workshop. Further discussions on this will take place in the near future at MSG meetings**.

Pete Cafferata provided a brief update on the 2001 and 2002 Hillslope Monitoring Program (HMP) contracts. Data collected in 2001 has been entered into the Hillslope Monitoring Program database and Dr. Don Warner has merged the replicate database with the 2001 data with the master database. Don Warner is continuing to work on simplifying queries and fixing query problems identified. **The 2002 HMP contract bid opening is set for March 14th. THP screening will take place in March with field work is anticipated to begin in May**.

Clay Brandow updated the MSG on Modified Completion Report (MCR) monitoring. He currently has more than 100 reports in his files and has completed a quality control check to determine the percentage of completed THPs randomly selected for MCRs that have actually had MCRs completed. To date, we are receiving monitoring data on about one-third of the randomly

selected THPs. **Due to the fact that a 25% sample of all completed THPs apparently is beyond the ability of field staff to successfully complete, Clay is reducing the sample to a random draw of 12.5%.** Based on the variability in the data so far, Tim Robards, CDF, was able to conclude that this reduction will still yield a good statistical sample—as long as the THPs randomly selected have MCRs completed. A chronically incomplete random sample may basis the study. **A letter from Director Tuttle to the CDF Regional Offices is currently being prepared to alert field staff of this change, and to increase motivation for collecting this data. Clay has MCR training sessions scheduled for March 20, 2002 and March 21, 2002 at Jackson Demonstration State Forest.** First priority for these sessions is the NCRWQCB staff. Roger Poff will assist Clay with the training sessions. There are 14 available slots for training. **Tharon O'Dell asked for other suggestions to help CDF actually collect this important data. Dean Lucke stated that a letter from the BOF to the Director expressing the need for this data would be beneficial.**

Under the new and unfinished business and public comment agenda items, the following items were offered:

- Richard Gienger suggested that the California Biodiversity Council (CBC)'s document titled "Best Funding Practices for Watershed Management" could be a possible item for discussion at a future MSG meeting. Syd Brown indicates that this document is available online at: http://ceres.ca.gov/biodiv/wwg.html.

- Holly Lundborg suggested that it may be beneficial to have other MSG Workgroup members help contact the 75 resource professionals that were sent letters asking for help on the Reference Watershed Catalog.

- Richard Gienger suggested that an appropriate MSG agenda item would be to have CDF discuss how/when it includes THP hillslope monitoring during/immediately following strong stressing storms. Tharon O'Dell agreed that this would be a worthwhile agenda item.

The next MSG meeting is scheduled for April 23rd at 10:00 a.m. at Howard Forest.